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DN

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TI

The hormone-sensitive lipase C-60G promoter polymorphism is associated with increased waist circumference in normal-weight subjects.

AU

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CS

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SO

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DT

Article

LA

English

ED

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AB

Objective: Hormone-sensitive lipase (HSL) is a key enzyme in the mobilization of fatty acids from triglyceride stores in adipocytes. The aim of the present study was to investigate the role of the HSL gene promoter variant C-60G, a polymorphism which previously has been associated with reduced promoter activity in vitro, in obesity and type 2 diabetes.Design: We genotyped two materials consisting of obese subjects and non-obese controls, one material with offspring-parents trios, where the offspring was abdominally obese and one material with trios, where the offspring had type 2 diabetes or impaired glucose homeostasis. HSL promoter containing the HSL C-60G G-allele was generated and tested against a construct with the C-allele in HeLa cells and primary rat adipocytes. HSL mRNA levels were quantified in subcutaneous and visceral fat from 33 obese subjects.Results: We found that the common C-allele was associated with increased waist circumference and WHR in lean controls, but there was no difference in genotype frequency between obese and non-obese subjects. There was a significant increased transmission of C-alleles to the abdominally obese offspring but no increased transmission of C-alleles was observed to offspring with impaired glucose homeostasis. The G-allele showed reduced transcription in HeLa cells and primary rat adipocytes. HSL mRNA levels were significantly higher in subcutaneous compared to visceral fat from obese subjects.Conclusion: The HSL C-60G polymorphism is associated with increased waist circumference in non-obese subjects.

CC

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Biochemistry studies - Nucleic acids, purines and pyrimidines 10062  
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IT

Major Concepts  
Molecular Genetics (Biochemistry and Molecular Biophysics); Nutrition;  
Human Medicine (Medical Sciences)

IT

Parts, Structures, & Systems of Organisms  
adipocyte; subcutaneous fat; visceral fat

IT

Diseases  
obesity: nutritional disease

Obesity (MeSH)

IT

Chemicals & Biochemicals  
triglycerides; mRNA [messenger RNA]; hormone-sensitive lipase;  
glucose: homeostasis

IT

Miscellaneous Descriptors  
waist circumference; allele transmission

ORGN

Classifier  
Hominidae 86215  
Super Taxa  
Primates; Mammalia; Vertebrata; Chordata; Animalia  
Organism Name  
HeLa cell line (cell\_line)  
human (common): adult, middle age, female, male  
Taxa Notes  
Animals, Chordates, Humans, Mammals, Primates, Vertebrates

ORGN

Classifier  
Muridae 86375  
Super Taxa  
Rodentia; Mammalia; Vertebrata; Chordata; Animalia  
Organism Name  
rat (common)  
Taxa Notes  
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals,  
Rodents, Vertebrates

RN

9001-62-1 (hormone-sensitive lipase)  
58367-01-4 (glucose)

GEN

human HSL gene [human hormone-sensitive lipase gene] (Hominidae):  
promoter polymorphism, G-allele